

**What is claimed is:**

1. A method of enhancing mucus function comprising administering an effective amount of a mucothickening agent to a subject in need thereof.
2. The method according to claim 1, wherein the mucus function is selected from respiratory track mucus clearance, epithelial protection, ion exchange and nutrient intake.
3. The method according to claim 2, wherein the respiratory track mucus clearance is mucociliary clearance and/or cough clearance.
4. The method according to claim 1, wherein the enhancing of mucus function is improving physical and/or biochemical properties of the layer of mucus lining the respiratory system, digestive system, urinary tract and/or the reproductive system.
5. The method according to claim 4, wherein the enhancing of mucus function is improving physical and/or biochemical properties of the layer of mucus lining the digestive system to enhance nutrient intake processes, epithelium protection and drug absorption.
6. The method according to claim 4, wherein the enhancing of mucus function is improving physical and/or biochemical properties of the layer of mucus lining the reproductive system to enhance conception and/or inhibit, transmission of sexually transmitted diseases (STD).
7. A method of inhibiting aerosolization and/or transmission of an airborne disease comprising administering an effective amount of a mucothickening agent to a subject in need thereof.
8. The method according to claim 7, wherein the airborne disease is selected from, Severe Acute Respiratory Syndrome (SARS), tuberculosis and influenza.

9. The method according to claim 7 or 8, wherein the inhibition of aerosolization and/or transmission of an airborne disease occurs by decreasing aerosolizable respiratory secretions in a way to minimize any adverse effect on mucus clearance, optionally in combination with enhancement of mucus clearance.

10. A method of treating a condition related to thin mucus or cilia malfunction or non-function, comprising administering an effective amount of a mucothickening agent to a subject in need thereof.

11. The method according to claim 11, wherein the conditions related to thin mucus or cilia malfunction or non-function include any condition of impaired airway secretion management,.

12. The method according to claim 11, wherein the conditions are selected from cystic fibrosis, asthma, Chronic Obstructive Pulmonary Disease (COPD), spinal chord injury, neuromuscular disease and those conditions or diseases requiring assisted mechanical ventilation.

13. A method of diagnosing a subject with a medical condition comprising administering an effective amount of mucothickening agent to said patient and screening said mucus for said medical condition.

14. The method according to any one of claims 1-13, wherein the mucothickening agent is any agent that promotes the formation of one or more of the following in mucus: covalent bonds, ionic bonds, hydrogen bonds, van der Waals' forces, intermingling or extracellular DNA & F-actin network.

15. The method according to claim 14, wherein the mucothickening agent is selected from one or more of high molecular weight polysaccharides, salts of tetrafunctional anions, salts of divalent cations and polycationic agents, and other pharmaceutically acceptable salts thereof.

16. The method according to claim 15, wherein the mucothickening agent is selected from one or more of dextran, sodium tetraborate, calcium chloride, magnesium chloride, polylysine, polyarginine and polymyxin B.
17. A use of a mucothickening agent to enhance mucus function.
18. A mucothickening agent to prepare a medicament to enhance mucus function.
19. A use of a mucothickening agent to inhibit aerosolization and/or transmission of an airborne disease.
20. A use of a mucothickening agent to prepare a medicament to inhibit aerosolization and/or transmission of an airborne disease.
21. A use of a mucothickening agent to treat a condition related to thin mucus or cilia malfunction or non-function.
22. A use of a mucothickening agent to prepare a medicament to treat a condition related to thin mucus or cilia malfunction or non-function.
23. A use of a mucothickening agent to diagnose a subject with a medical condition.
24. A use of a mucothickening agent to prepare a medicament to diagnose a subject with a medical condition.
25. A pharmaceutical composition comprising a mucothickening agent and pharmaceutically acceptable carriers or diluents.